FACT SHEET

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Methyl Tertiary-Butyl Ether (MTBE)
Office of Land Quality

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Description:

- Methyl tertiary-butyl ether (MTBE) is a chemical compound that is manufactured by the chemical reaction of methanol and isobutylene.
- MTBE contains oxygen. When added to gasoline (for example, in reformulated gasoline (RFG) and winter oxygenate gasoline), it boosts octane ratings to meet clean fuel oxygen requirements and reduces air pollution and smog related issues.
- In the federal Clean Air Act, Congress required that RFG gasoline contain oxygen, 2 percent by weight. Oil companies had a choice between two oxygenates, ethers such as MTBE and alcohols such as ethanol, to meet the law's requirements.
- MTBE was one of several ethers used as oxygenates. It was used in U.S. gasoline at low levels starting in 1979, to replace lead as an octane enhancer to help prevent the engine from "knocking." Between 1992 and 2005, MTBE had been used at higher concentrations in RFG gasoline grades to fulfill the oxygenate requirements set by Congress in the 1990 Clean Air Act Amendments.
- RFG gasoline was only required in a few counties in Indiana under the federal Clean Air Act. However, oxygenates were also used as octane boosters, and most fuel contained at least small amounts of MTBE from mixing during storage and distribution.
- MTBE was the most common oxygenate found during the investigations of gasoline releases to the environment in Indiana.
- Due to growing health and environmental concerns, Indiana adopted a partial ban on MTBE use on March 14, 2002, which allowed no more than 0.5 percent by volume MTBE in gasoline.
- In 2005, Congress passed the Energy Policy Act, which removed the oxygenate requirement for RFG gasoline.
- Due to the Indiana ban and the changes in federal law, MTBE is not found in new petroleum leaks.
- Today, most U.S. gasoline is blended with 10 percent ethanol as a cost-effective and more environmentally friendly replacement for MTBE.

Environmental Impacts:

- Small individual fuel spills and storm water runoff contribute to detections of MTBE in water supplies. MTBE detections at high concentrations usually result from leaking underground or above ground fuel storage tanks and pipelines.
- Since MTBE is very soluble in water and does not "cling" to soil well, it has a tendency to migrate much more quickly into water than other components of gasoline.
- MTBE is not expected to concentrate in fish or plants found in lakes, ponds and rivers.
- Testing by the U.S. Geological Survey show detections of MTBE in approximately 20 percent of the groundwater in RFG areas, while there is only a 2 percent detection rate in non-RFG areas.

- People may be exposed to MTBE from groundwater pollution. The Agency for Toxic Substances and Disease Registry (ATSDR) provides information about MTBE on its website at http://www.atsdr.cdc.gov/phs/phs.asp?id=226&tid=41 and http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=227&tid=41.

IDEM's Role:

- The Indiana Department of Environmental Management (IDEM) is responsible for protecting human health and the environment while providing for safe industrial, agricultural, commercial, and governmental operations vital to a prosperous economy.
- IDEM's Office of Land Quality regulates the storage of fuel in underground storage tanks (USTs) to prevent spills.
- IDEM's Office of Land Quality also regulates the cleanup of leaks and spills from USTs, as well as other sources such as above ground storage tanks, pipelines, and transportation accidents.
- IDEM has risk-based guidance and screening levels for cleanup for MTBE and chemicals in the agency's Remediation Closure Guide and Remediation Program Guide.
- IDEM works with the U.S. EPA to enforce the rules and regulations governing MTBE use, and provides monitoring data related to drinking water and ongoing cleanups.

Additional Information:

- For questions and concerns, please call IDEM's Office of Land Quality at (317) 232-8900 or, toll free, at (800) 451-6027, ext. 2-8900.
- For more information on the effects of exposure to MTBE, please visit the Agency for Toxic Substances and Disease Registry's (ATSDR) website at www.atsdr.cdc.gov/phs/phs.asp?id=226&tid=41.
- For more information on ethanol, please refer to IDEM's Fact Sheet on Ethanol at www.IN.gov/idem/4522.htm.
- For more information on MTBE in gasoline and other fuels, please visit U.S. EPA's website at www.epa.gov/oust/mtbe/index.htm.
- For more information on emissions from oxygenates, please visit U.S. EPA's website at www.epa.gov/oust/oxygenat/oxyabt.htm.
- For information about risk-based cleanups, including IDEM's Remediation Closure Guide and Remediation Program Guide, visit www.IN.gov/idem/6799.htm.